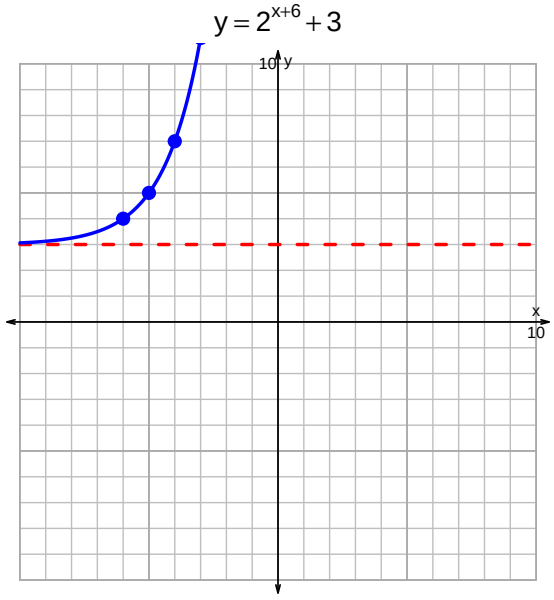
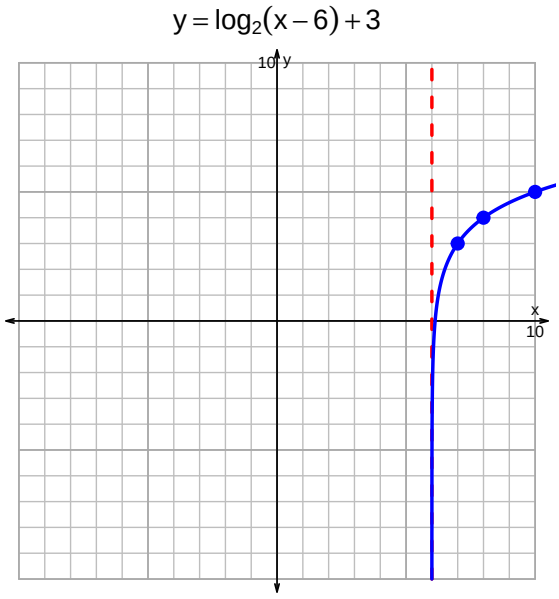
Name: Date:

S18QUIZ: EXP LOG (SLTN v225)

1. Graph $y = 2^{x+6} + 3$ and $y = \log_2(x - 6) + 3$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-11 = \left(\frac{-3}{5}\right) \cdot 2^{-7t/4}$$

Divide both sides by $\frac{-3}{5}$.

$$\frac{11 \cdot 5}{3} = 2^{-7t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{11 \cdot 5}{3}\right) = \frac{-7t}{4}$$

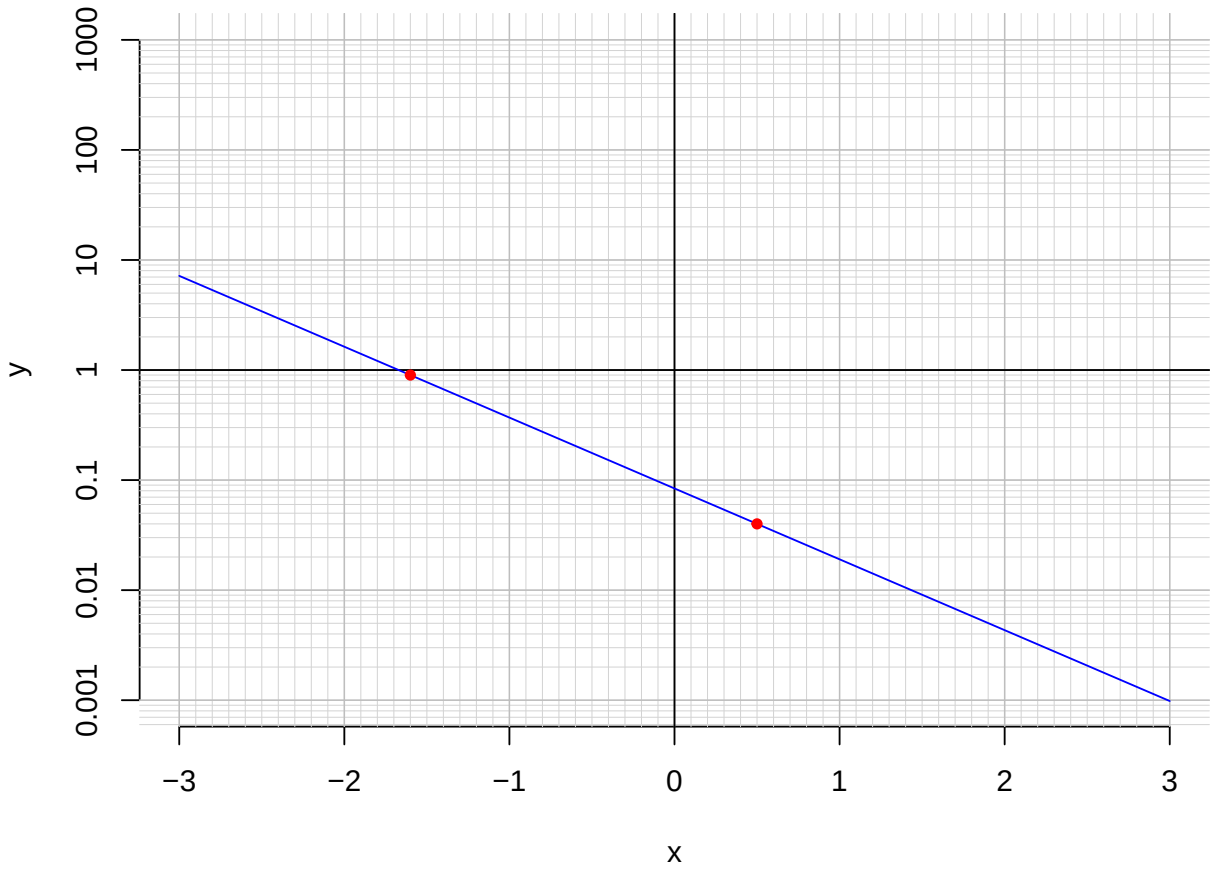
Divide both sides by $\frac{-7}{4}$.

$$\frac{-4}{7} \cdot \log_2\left(\frac{11 \cdot 5}{3}\right) = t$$

Switch sides.

$$t = \frac{-4}{7} \cdot \log_2\left(\frac{11 \cdot 5}{3}\right)$$

3. An exponential function $f(x) = 0.0839 \cdot e^{-1.48x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-1.6)$.

$$f(-1.6) = 0.9$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{1.48} \cdot \ln\left(\frac{x}{0.0839}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.04)$.

$$f^{-1}(0.04) = 0.5$$